

Part I - Declaration

1.1 Site Name and Location

The Lava Cap Mine Superfund Site (CERCLIS ID No. CAD983618893) (the Site) is located in rural Nevada County in the State of California. The nearest cities are Nevada City (located approximately three miles northwest of the Site) and Grass Valley (located approximately six miles southwest of the Site). The Site is divided into work areas, or operable units. This Explanation of Significant Differences (ESD) pertains to the Mine Area Operable Unit, also known as Operable Unit 1.

1.2 Statement of Basis and Purpose

This decision document presents the ESD pertaining to the Mine Area Operable Unit of the Site. The ESD amends the Mine Area Operable Unit Record of Decision (ROD) dated September 28, 2004. The ESD was developed in accordance with United States Environmental Protection Agency (EPA) guidance and conforms with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The State of California, in a letter to EPA dated September 22, 2006, concurs with this ESD.

1.3 Assessment of the Site

The response action selected in the Mine Area Operable Unit ROD, as amended by the ESD, is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 Description of the ESD

The Lava Cap Mine Superfund Site was historically operated as a hardrock gold and silver mine up until 1943. Arsenic contamination present in the discarded mine tailings led to the listing of the mine on the federal National Priorities List (NPL) in 1999.

The processing of ore to extract gold and silver at the Mine Area Operable Unit produced finely ground tailings containing naturally-occurring arsenic and trace metals. EPA has designated these tailings as a principal threat waste at the Site because they are highly toxic and highly mobile, and present a significant risk should exposure occur. The tailings were disposed of in the Little Clipper Creek drainage adjacent to the mine's ore processing buildings. The tailings were held in place by a log dam constructed across Little Clipper Creek. During a major storm in January 1997, the log dam partially collapsed and flood waters spread arsenic-laden tailings downstream.

The Mine Area Operable Unit ROD, which was signed in September 2004, selected the following remedy:

- (1) Mine buildings, tailings, waste rock, and mine drainage: Consolidate, regrade, and cap the tailings with a low-permeability engineered cover system; contour, cover and revegetate the waste rock disposal area to promote runoff and reduce surface infiltration; replace the failed log dam with a rock buttress; divert clean surface water flows around the tailings and waste rock disposal areas; collect and treat contaminated water emanating from the mine (i.e. the mine drainage) and from the tailings pile (i.e. the seeps) to meet the remedial action objective of restoring Little Clipper Creek to its beneficial use as a potential drinking water supply; remove tanks, vats, sumps, and contaminated soil from mine buildings, consolidating this material with the mine tailings or shipping it offsite for disposal; and implement land use restrictions to protect the Selected Remedy from physical disturbance and prohibit the property from being used as a residence, including any mobile home, a hospital, a public or private school or a day care center, where such use is inconsistent with the Selected Remedy (such land use restrictions shall be implemented as land use covenants under relevant provisions of the California Civil Code, Section 1471 and Title 22 of the California Code of Regulations, Section 67391.1).
- (2) Mine Area residences: Demolish the residence that was constructed over the waste rock and adjacent to the tailings disposal areas; remove arsenic-contaminated soil from around three other residences and replace it with clean soil; move excavated material to the tailings disposal area for long-term management.
- (3) Little Clipper Creek to Greenhorn Road: Excavate the tailings and arsenic-contaminated sediment which has accumulated along Little Clipper Creek adjacent to Tensy Lane as far south as Greenhorn Road; and haul excavated material to the tailings disposal area for long-term management

This ESD changes element (2) above of the selected remedy to the following:

Mine Area residences: Demolish two residences: the residence referred to in the ROD as the "Upper Rental", which is located on Parcel 39-160-25, and which was constructed over the waste rock and adjacent to the main tailings disposal area; and the residence referred to in the ROD as the "Lower Rental", which is located on Parcel 39-160-30, and which was constructed over a separate tailings disposal area. Remove arsenic-contaminated soil from around one other residence, which is located on parcel 39-160-16, replace it with clean soil, and move the excavated material to the tailings disposal area for long-term management.

Reasons for the changes are as follows:

a) Two residences are being demolished instead of one. The Upper Rental, which is located on Parcel 39-160-25, will still be demolished as anticipated in the ROD. However, information collected since the ROD was signed has led EPA to conclude that another residence must be demolished as part of the cleanup. Sampling activities conducted in the yard of the Lower Rental (parcel 39-160-30) as part of the Remedial Design process determined that arsenic contamination is much more extensive than previous data had indicated. The depth and areal extent of the contaminated soil surrounding the Lower Rental

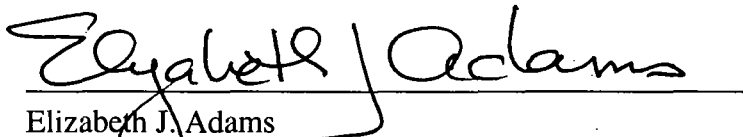
makes it technically impracticable to remove the tailings and maintain the Lower Rental in residential use. EPA has determined that the area surrounding the Lower Rental will be addressed consistent with the Selected Remedy as it pertains to the other waste rock and tailings disposal areas at the Site, i.e., the areas will be capped and revegetated. Capping the tailings necessitates the demolition of the Lower Rental.

b) The cleanup now involves excavating arsenic contaminated soil from around one residence instead of three as specified in the ROD. The one residence which was addressed in this manner is the one located on parcel 39-160-16, at which contaminated soil was excavated and replaced with clean soil starting in September 2005 as part of the Operable Unit 4 cleanup. Operable Unit 4 (the Mine Area Residences Operable Unit) was broken apart from Operable Unit 1 to allow the cleanup of this parcel, which is in residential use, to proceed before the rainy season in the winter of 2005. The two residences which will no longer be addressed in this manner are the Lower Rental (parcel 39-160-30), which as discussed above, will now be demolished, and the residence located on parcel 39-160-21, which does not require cleanup at all based on additional information collected as part of the Remedial Design process.

The demolition of the additional residence in this ESD results in a cost increase of approximately 3%.

1.5 Statutory Determination

The Selected Remedy, as amended by the ESD, remains protective of human health and the environment. Because the Selected Remedy results in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure, statutory reviews will be conducted at five year intervals to ensure that the remedy is, or will be, protective of human health and the environment. Based on the onsite construction date of September 21, 2005 for the first Remedial Action taken at the Site (at Operable Unit 4), the First Five Year Review is scheduled for completion in September 2010.


Elizabeth J. Adams
Chief, Site Cleanup Branch
Superfund Division

September 29, 2006
Date

Part II – Explanation of Significant Differences

2.1 Introduction to the Site and Statement of Purpose

The Lava Cap Mine Superfund Site (CERCLIS ID No. CAD983618893) (the Site) is located in rural Nevada County in the State of California. The nearest cities are Nevada City (located approximately three miles northwest of the Site) and Grass Valley (located approximately six miles southwest of the Site.)

The Site as a whole comprises a large geographic area. In order to facilitate cleanup, the Site has been divided into several operable units. This Explanation of Significant Differences (ESD) documents a change to the Superfund remedial action which was selected in the Mine Area Operable Unit Record of Decision (ROD), dated September 28, 2004.

The Mine Area Operable Unit is mostly comprised of disturbed land of an abandoned industrial character. It comprises seven parcels, four of which were in residential use at the time the ROD was signed: Nevada County Parcels 39-160-16, 21, 25, and 30. Areas in need of cleanup at the Mine Area Operable Unit, as described in the ROD, include mine buildings, tailings, waste rock, mine drainage, mine area residences, and portions of Little Clipper Creek downstream of the mine buildings.

This ESD results from additional information collected on the nature and extent of contamination at the Mine Area Operable Unit during the Remedial Design process. Data collected since the ROD was signed led EPA to determine that the residence located on Parcel 39-160-25 was built on extensive deposits of waste rock and tailings, and therefore must be demolished as part of the Remedial Action. Further, as a result of the additional information collected, EPA determined that no cleanup is necessary around the residence located on Parcel 39-160-21.

This ESD was developed in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (which addresses changes to Superfund remedial actions). The United States Environmental Protection Agency (EPA) is the lead agency for this project, and the California State Department of Toxic Substances Control (DTSC) is the support agency. DTSC has concurred with the ESD in a letter to EPA dated September 22, 2006.

This ESD will become part of the Site Administrative Record. The Site Administrative Record may be reviewed at EPA's Superfund Record Center located at 95 Hawthorne Street in San Francisco, or at the Grass Valley Public Library, or at the Nevada County Public Library. Contact information is provided at the end of this document.

2.2 Site History, Contamination, and Selected Remedy

The Lava Cap Mine Superfund Site was historically operated as a hardrock gold and silver mine up until 1943. Arsenic contamination present in the discarded mine tailings led to the listing of the mine on the federal National Priorities List (NPL) in 1999.

The processing of ore to extract gold and silver at the mine produced finely ground tailings containing naturally-occurring arsenic and trace metals. EPA has designated these tailings as a principal threat waste at the Site because they are highly toxic and highly mobile, and present a significant risk should exposure occur. The tailings were disposed of in the Little Clipper Creek drainage adjacent to the mine's ore processing buildings. The tailings were held in place by a log dam constructed across Little Clipper Creek. During a major storm in January 1997, the log dam partially collapsed and flood waters spread arsenic-laden tailings downstream.

The Site has been divided into four operable units: the Mine Area Operable Unit (OU1), the Groundwater Operable Unit (OU2), the Lost Lake Operable Unit (OU3), and the Mine Area Residence Operable Unit (OU4). As discussed above, this ESD pertains to the Mine Area Operable Unit.

The Mine Area Operable Unit ROD, which was signed in September 2004, selected the following remedy:

- (1) Mine buildings, tailings, waste rock, and mine drainage: Consolidate, regrade, and cap the tailings with a low-permeability engineered cover system; contour, cover and revegetate the waste rock disposal area to promote runoff and reduce surface infiltration; replace the failed log dam with a rock buttress; divert clean surface water flows around the tailings and waste rock disposal areas; collect and treat contaminated water emanating from the mine (i.e. the mine drainage) and from the tailings pile (i.e. the seeps) to meet the remedial action objective of restoring Little Clipper Creek to its beneficial use as a potential drinking water supply; remove tanks, vats, sumps, and contaminated soil from mine buildings, consolidating this material with the mine tailings or shipping it offsite for disposal; and implement land use restrictions to protect the Selected Remedy from physical disturbance and prohibit the property from being used as a residence, including any mobile home, a hospital, a public or private school or a day care center, where such use is inconsistent with the Selected Remedy (such land use restrictions shall be implemented as land use covenants under relevant provisions of the California Civil Code, Section 1471 and Title 22 of the California Code of Regulations, Section 67391.1).
- (2) Mine Area residences: Demolish the residence that was constructed over the waste rock and adjacent to the tailings disposal areas; remove arsenic-contaminated soil from around three other residences and replace it with clean soil; move excavated material to the tailings disposal area for long-term management.

- (3) Little Clipper Creek to Greenhorn Road: Excavate the tailings and arsenic-contaminated sediment which has accumulated along Little Clipper Creek adjacent to Tensy Lane as far south as Greenhorn Road; and haul excavated material to the tailings disposal area for long-term management

This ESD changes element (2) of the remedial action as described in Section 2.4.

2.3 Basis for the ESD

This ESD was made necessary by new information collected during the Remedial Design phase of the project, as discussed below.

Following the signature of the Mine Area Operable Unit ROD, in order to address residential areas of the Site prior to commencement of the rainy season in winter 2005-6, EPA separated out a portion of the work. As a result of this decision, EPA designated a new operable unit known as the Mine Area Residences Operable Unit.

During the Remedial Design of the Mine Area Residences Operable Unit cleanup, EPA collected additional data with the purpose of determining more precisely the amount of soil to be excavated around three residences specified in the OUI ROD located on Parcels 39-160-16, 21, and 30. Sampling activities were conducted in February, March, and May 2005.

Data collected on Parcel 39-160-30, which contains the residence referred to in the ROD as the “Lower Rental”, demonstrated the residence is not surrounded by a limited amount of contaminated soil as assumed in the ROD, but was constructed on top of a waste rock and tailings disposal area. At twenty-one sample locations within a one hundred foot radius of the residence, all samples (taken at the surface and at a depth of two feet below ground surface) exceeded the arsenic cleanup goal of 20 parts per million (see Table 1). Further, as the sampling effort stepped out from the immediate perimeter to a distance of approximately five hundred feet, all samples to the north-northeast (in the direction of the main tailings disposal area) exceeded the cleanup goal for arsenic.

The depth and areal extent of contaminated soil, and the levels of arsenic found at the locations sampled on Parcel 39-160-30 led EPA to determine that the parcel can no longer remain in residential use. EPA considered moving the tailings and waste rock from Parcel 39-160-30 to the main disposal area but concluded this is technically impracticable due to the amount of material that would have to be excavated and the amount of clean fill that would have to be imported. EPA has concluded that the tailings and waste rock must be capped in place. This approach is consistent with EPA’s handling of the other waste rock and tailings disposal areas at the Site.

TABLE 1 / ARSENIC RESULTS / PARCEL 39-160-30

	Samples Taken at Ground Surface	Samples Taken at 2 Feet Below Ground Surface
Number of Sample Locations	21	14
High Value (ppm)	1400	830
Low Value (ppm)	55	91
Average (ppm)	516	382
Number of Samples < 20 ppm ¹	0	0
Number of Samples 20 -100 ppm	2	1
Number of Samples 100-500 ppm	9	8
Number of Samples > 500 ppm	10	5

EPA's data collection effort also resulted in one other change. Sampling conducted on Parcel 39-160-21 led EPA to conclude that no cleanup action is necessary for this parcel. Nineteen locations were sampled on Parcel 39-160-21, all within six hundred feet of the residence located on the parcel, which is referred to in the ROD as the "Main Residence". Results showed slightly elevated arsenic levels in comparison to the cleanup goal of 20 ppm (see Table 2). However, a careful analysis of other chemical and physical characteristics of the soil determined that these levels of arsenic are naturally occurring and result from a geology that differs from that on other parts of the Site. Field verification visits also confirmed that the soil sampled on this parcel bears no physical resemblance to the tailings or waste rock located in the disposal areas at the Site. The cleanup goal of 20 ppm arsenic was based on a regional background level of arsenic in naturally occurring soil. EPA believes it is consistent with the Selected Remedy to apply a localized background level when scientific data support such an approach.

¹ Cleanup Goal in ROD

TABLE 2 / ARSENIC RESULTS / PARCEL 39-160-21

	Samples Taken at Ground Surface
Number of Sample Locations	19
High Value (ppm) ²	428
Low Value (ppm)	9.2
Average (ppm)	68.4
Average Excluding High Value (ppm)	48.5
Number of Samples < 20 ppm ³	4
Number of Samples 20 -100 ppm	12
Number of Samples 100-500 ppm	3
Number of Samples > 500 ppm	0

2.4 Description of Significant Differences

This ESD changes element (2) above of the selected remedy to the following:

- (2) Mine Area residences: Demolish two residences: the residence referred to in the ROD as the “Upper Rental”, which is located on Parcel 39-160-25, and which was constructed over the waste rock and adjacent to the main tailings disposal area; and the residence referred to in the ROD as the “Lower Rental”, which is located on Parcel 39-160-30, and which was constructed over a separate tailings disposal area. Remove arsenic-contaminated soil from around one other residence, which is located on parcel 39-160-16, replace it with clean soil, and move the excavated material to the tailings disposal area for long-term management. The demolition of the additional residence results in a cost increase of approximately 3%.

² Sample taken in roadway which has since been capped

³ Cleanup Goal in ROD

2.5 Statutory Determination

The Selected Remedy, as amended by the ESD, remains protective of human health and the environment. Because the Selected Remedy results in hazardous substances, pollutants, or contaminants remaining onsite above levels that allow for unlimited use and unrestricted exposure, statutory reviews will be conducted at five year intervals to ensure that the remedy is, or will be, protective of human health and the environment. The First Five Year Review is scheduled for completion in September 2010, which occurs five years after the start of construction at OU4 (September 21, 2005).

2.6 Public Participation

Pursuant to CERCLA and the NCP (Section 300.435(c)(2)), EPA has consulted with the support agency (DTSC), is making this ESD available to the public, is publishing a notice of availability and a brief description of the ESD in a newspaper of general circulation, and is including the ESD in the Site Administrative Record. As stated above, DTSC has concurred with this ESD in a letter to EPA dated September 22, 2006.

2.7 Contact Information

EPA Project Manager:

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EPA Community Involvement Coordinator:

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berkman.lauren@epa.gov

Information Repositories (where the Site Administrative Record is available for review):

EPA Superfund Record
Center
95 Hawthorne Street
Suite 403S
San Francisco, CA 94105

415-536-2000
Nevada County Library
980 Helling Way
Nevada City, CA 95959
530-265-7050

Grass Valley Public
Library
206 Mill Street
Grass Valley, CA 95945
530-273-4117